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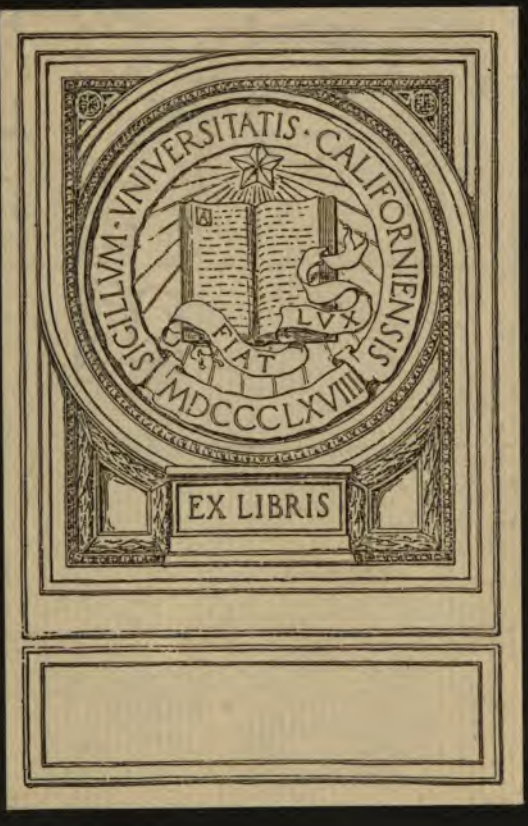
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MANUAL OF DIRECTIONS
FOR GIVING AND SCORING

THE DEARBORN GROUP TESTS OF INTELLIGENCE

SERIES I

GENERAL EXAMINATIONS A AND B
FOR GRADES I TO III

REVISED EDITION

PHILADELPHIA AND LONDON
J. B. LIPPINCOTT COMPANY

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MANUAL OF DIRECTIONS
FOR GIVING AND SCORING

THE DEARBORN GROUP TESTS OF INTELLIGENCE

SERIES I
GENERAL EXAMINATIONS A AND B
FOR GRADES I TO III

REVISED EDITION

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THE DEARBORN GROUP TESTS OF INTELLIGENCE

SERIES I *

The Dearborn group tests of intelligence are arranged in two series: Series I and II. Series I is composed of General Examinations A and B and is designed for use in grades I to III inclusive. Series II is composed of General Examinations C and D and is designed for use in grades IV to XII inclusive. In testing with Series I, General Examination A should be given first, followed, after a convenient interval of at least a class period, by General Examination B. When the class attendance is regular the two examinations may well be given on successive days. A similar procedure is to be followed with General Examinations C and D of Series II. For testing in the first grade it is often desirable to subdivide the tests still further and give them in four short periods. A convenient division of the tests for this purpose is as follows: first period, tests 1–15; second period, tests 16 and 17; third period, tests 18, 19 and 20; fourth period, tests 21 and 22.

The individual's score in either series is the *sum* of the credits on the two examinations. This combined score of the two examinations has been found, in general, to be more reliable than the score of either examination alone. The standard scores for the different chronological ages, with directions for calculating mental ages and intelligence quotients, are printed at the end of this manual, following the directions for scoring.

When it is desirable or necessary to devote less time to testing, General Examination A may be used as an abbreviated scale for Series I

* The directions for giving and scoring the tests of Series II are published in a separate manual.

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and General Examination C for Series II. Standards for these examinations may be secured from the publishers on request.

DIRECTIONS FOR THE EXAMINER

THE directions for giving the following tests or "games" should be closely adhered to in order to make possible a fair comparison with the standards. In many cases a change in phraseology may change the character of the test. To assure reliable results examiners should have preliminary training in the giving of group tests. The regular teachers may give the tests, but when there are several grades or a whole school to be tested, it is usually better to select one or two persons, either the principal or teachers who are especially skillful in group work, to do the testing. The room teachers may then assist by entering the names and birthdays on the record sheets, but should not give any other assistance during the progress of the tests.

A good plan to follow, after a careful study of the directions, is to jot down on a copy of the tests the chief facts to be kept in mind. This record may be quickly referred to as needed during the progress of the testing. When the directions are read from the manual there is apt to be a loss of spontaneity in the giving of the tests, and confusion and delay in looking from the manual to the test sheets.

When the tests are given for the first time by an examiner, it is well to try them out on a small group of children from some other grade than the one to be tested (*e.g.*, a sixth grade) and then to begin the testing with a third grade, since any lack of familiarity with the directions will not cause as much difficulty as in the lower grades.

As is indicated by the title page of the tests, it is best that pupils regard these exercises as in the nature of games and puzzles rather than as some new form of examination. They should be encouraged to play the "games" as well as they can.

While the tests are being given the room teacher should be asked to copy from the register upon the accompanying record sheet the alphabetical list of her pupils with the *birthday of each one* (*e.g.*, 1912-11-29), and keep this list with the test sheets for the room.

After the papers have been collected, she should examine them to see that all names are legibly written.

In giving the directions the examiner should hold a copy of the test sheet before the class, and in pointing to the place where the pupils are to write or draw (see, for example, the first test sheet), make sure that the pupils on his extreme right and left, as well as those in the rear rows, see where he is pointing.

Timing the Tests. On a few of the tests a time limit is set. On the remaining tests there are no definite time limits, the intention being to give every child time to do what he is able to do. Experience has shown, however, that when about three-quarters of a class have finished a test, the other quarter will not add appreciably to their scores by a further extension of the time. Hence, in order not to prolong unduly the time for testing, the following rule should be followed: *except where a definite time limit is set, proceed to the next test or "game" when approximately three-quarters of the class have finished.*

PRELIMINARY DIRECTIONS TO PUPILS

(N. B.—HAVE DESKS CLEARED, AND PENCILS SHARPENED. TEACHER SHOULD HAVE EXTRA PENCILS AT HAND IN CASE ANY PENCIL POINTS ARE BROKEN, AND INSTRUCT PUPILS TO RAISE HANDS PROMPTLY IF OTHER PENCILS ARE NEEDED DURING THE PLAYING OF THE "GAMES." DISTRIBUTE TEST SHEETS.)

How many of you would like to play some games? Before we begin we must learn the rules of the games.

First, when I say *"Pencils up,"* hold your pencil up like this, with the elbow on the desk. (Teacher shows how to lift the forearm only, leaving the elbow on the desk to avoid fatigue.)

Now let us practice a moment with our pencils. When I say "GO," put your pencil down on the paper, and when I say *"Pencils up!"* see how quickly you can raise them and look straight at me. Carefully now. "GO." *"Pencils up."* (Practice two or three times, until the response is prompt.)

Now there is only one other rule, that is that each of you is to play by himself, and not look at any one else's paper. When you have finished, hold your pencils up so that I can see them.

Now write your name nicely in the space on the first line of the page where it says NAME. (The teacher should write the names for pupils who cannot write.) Next write how old you are just after where it says AGE. Then write (examiner gives grade number) where it says GRADE. Now write the name of the *school, town* or *city,* and *date.* (If pupils cannot write these the teacher may either fill in later or make entry in the accompanying record sheet.)

DIRECTIONS FOR GIVING GENERAL EXAMINATION A

Now We Will All Turn the Page and Fold the Back Sheet Under

(EXAMINER SHOULD SHOW HOW TO FOLD THE PAGE BACK AND SEE THAT PUPILS HAVE THE RIGHT PLACE.)

1. *"Pencils up."* How many see the ball and the box at the top of the page? In the space to the side right here (pointing to space), draw me another box and then put the ball in it. Draw them like this (examiner should illustrate on blackboard, or have square with circle in it already drawn on the blackboard before the test is given). GO!

2. How many see the picture of the boy running? How many can draw a boy running after him? Draw him right here (indicating space to right of boy). How many see the cat? Now draw a dog running after the cat.

3. Who can find the picture of the watch? How many see the key? How many see the knife? Now I want you to listen carefully and not to write until I tell you to. *"Pencils up!"* (See that all children have their pencils up.) Hold your pencils up until I tell you all the things to do, then I'll say "GO" and you may do them. I want you to make a box like this (illustrate on blackboard) about the watch, and a ring like this O around the key and an X like this through the knife. Remember (repeat): a box, etc. Draw all three. "GO."

4. Now look at the line of numbers right under the watch. I want you to find the number which tells how old you are, and make a ring around it.

5. Now find the apple. Suppose you wanted to give me half the apple. Take your pencils and cut the apple so you could have half, and I could have half. Now make another apple and cut it in halves.

6. Now look at the shoe and the coal hod filled with coal and next to it the hairpin. I want you to draw two lines like this (X) through the one which you think would be heaviest to lift up, *i.e.*, the shoe, the coal hod or the hairpin. Now draw a ring like this (o) through the lightest one of the three.

7. Here are the pictures of a house and a schoolhouse with two roads (streets in city) from the house to the school. Johnny lives in the house. Do you see him at the front door (pointing)? He generally goes to school by the shorter road. Now I want you to draw me a line right IN the road that will take him to school the "quickest." "GO." (Pause.) One day Johnny was almost late, and instead of going by the road he came right out of his back door and ran straight across to school. Show me with another line just how he went. "GO."

8. A boy had all these marbles in a box (pointing to picture). If he gave you half of them and kept half of them himself, show me how many you would have by drawing them right here (indicating space). (Pause.) Now count how many you would have and write the number in the box over here (pointing to the box). "GO."

NOW WE WILL ALL TURN THE PAPERS OVER
(EXAMINER SHOULD SEE THAT THE PUPILS HAVE THE RIGHT PAGE.)

9. Do you see all these little sticks? I want you to draw right here (indicating space) *all* the sticks. "GO." (Pause.) Have you made just as many as there are in the picture? Now count how many you made and write the number in the little box here at the side of the page (pointing to it). "GO."

10. This picture is called a diamond. I want you to draw one just like it right here beside it. (Pause.) Now look at the diamond again.

See if you can draw a still better one right next to your first one.

11. How many see the picture of the hand? Which is it, a right hand or a left hand? (Left.) I want you to draw a *right* hand next to this one. "GO." (Pause.) Now count how many fingers and thumbs there are in all on both hands. Write the answer in the little box here (pointing to it).

12. Here is a star. See if you can draw another star just like it right here (indicating space).

13. Now find the picture of the penny. What is the piece of money right under it? (25 cents or quarter.) Now I want you to make some pennies by marking 1 on all the rings which are of the same size as the penny. (Pause.) Now we will make some quarters by marking two lines (illustrate on blackboard) on all the rings of the same size as the quarter. "GO." (Pause.) Now count how many pennies you have made. Write the answer in the box just over the first penny. "GO." (Pause.) Now count how many quarters you made. Write the answer in the box under the quarter. "GO." (Pause.) Counting all the money that you made both pennies and quarters, think how much money you will have altogether. Write the answer in the large box here at the side of the page.

14. Now look at the stamps. Suppose you want to mail some picture post-cards and some letters which you have written. Can you find the right stamps to put on them? Put a ring (o) on all the stamps for the post-cards, and a big cross (X) on all the stamps for letters. "GO." (Pause.) Now find how much money it would cost to buy *all* the stamps. Write the answer in the box under the stamps. "GO."

15. How many see the *big* square field with a gate on the side (pointing to No. 15)? How many see the gate? Is it open or shut? (Open.) *"Pencils up."* A lady lost her purse in this *big* field. Now suppose she offered you twenty-five cents to find it for her. It is in there somewhere and you will have to look very carefully. Now take your pencils and start at the gate and draw a line to show me where you would go to hunt for the purse so as to be sure not to miss it. "GO."

NOW TURN OVER TO THE LAST PAGE

16. Have we all found the clocks? Now look at all the clocks in the first row and *think to yourself* what time each one says. (*Examiner should pause for one minute.*)

(1) Find the clock which says three o'clock and mark " 1 " right above it. " GO." (*Examiner should pause for only four or five seconds* after each clock so as not to give time for copying.)

(2) Now find the clock which says half-past ten or ten-thirty and mark 2 above it. " GO."

(3) Now find the clock which says half-past one or one-thirty and mark 3 above it. " GO."

(4) Now find the clock which says ten minutes to two and mark 4 above it. " GO."

(5) Now find the clock which says twenty-five minutes of five and mark 5 above it. " GO."

(6) Now find the clock which says twenty minutes to three and mark 6 above it. " GO."

Now look at the next row of clocks. Can you tell time by them? Why? (Haven't any hands.) In the first clock draw in the hands so as to show how the clock looks at ten o'clock in the morning. (Pause.) Put the hands on the next clock to show how the clock looks at just half-past four in the afternoon. (Pause.) In the third clock show how the clock looks at a quarter of two. (Pause.) In clock number 4, show how the clock looks when school lets out (or closes) in the morning, (or, if there is but one session, when it is time for recess). (Pause.) In clock number 5, show how the clock looks when school lets out (or closes) in the afternoon. (Pause.) In clock number 6, show how the clock looks at midnight.

17. Now we are going to play another game. Look at the boys in the first room. What is the first boy doing? This boy here (pointing to No. 1)? (Wait a moment for an answer.) Yes! He is sitting down.

What is No. 2 doing (pointing to No. 2)? He is crawling or creeping.

What is No. 3 doing (pointing to No. 3)? He is standing or walking.

What is No. 4 doing (pointing to No. 4)? He is running.

What is No. 5 doing (pointing to No. 5)? He is jumping.

Now we are going to play the game this way: We will put a number 1 under each boy or animal we can find who is sitting, and a number 2 under each boy or animal who is crawling and a number 3 under each boy or animal who is standing, and a number 4 under each boy or animal who is running, and a number 5 under each boy or animal who is jumping.

Now look at the boys in the next room. What is the first boy doing (pointing to first boy in second line)? He is sitting down. What number shall we put under him? (1) Write 1 under him. What is the next boy doing (pointing to, etc.)? What number shall we put under him? (3) Write 3 under him. Is the next boy running? What number shall we put under him? (4) Write 4 under him. Who can find a rabbit? What is it doing? Running. What number shall we put under it? Yes! No. 4, because the rabbit is running. How many see the horse below the rabbit in the last row? He is standing on his hind legs. Write 3 under the horse to show that he is standing. Now put the right numbers under *all* the other boys and animals to show whether they are standing or sitting or running or jumping or crawling. Begin here in the first row (pointing). "GO." (After a short pause, say "when you have finished with the first row, do the next row." Repeat later for third and fourth rows, if pupils are seen finishing before the time is up.)

(*Stop after exactly two minutes.*) *"Stop." Collect papers.*

GENERAL EXAMINATION B

Directions to Examiner. Before beginning this examination draw on the blackboard a 6–2 domino like the first one in game 18 and a 2–2 domino (like the first one in row 3), and a 3–3 domino (like the last one in row 3). *Now distribute test papers and have pupils write names, grade, etc.*

Now we are going to play some more games.

18.—Dominoes

"*Pencils up.*" Now let us look at this *domino* on the blackboard. How many spots are there *in both boxes of this domino?* (Count 1, 2, 3, 4, 5, 6, 7, 8.) Now look at the dominoes on your paper. Find all the dominoes which have *just eight* spots on them and *put a cross like this* (illustrating on domino on board) on them. Remember: cross out the dominoes which have *just eight* spots. "GO." "*Pencils up*" (*when three-fourths of class have finished*). Now look at this domino (point out the double two on board). It has just the same number of spots in both boxes, hasn't it? We will mark a ring around this domino. (Do so on board.) (Illustrate similarly with the 3–3 domino on board.) Now I want you to look again at all the dominoes on your paper and to mark a ring on every one that has just the same number of spots in both boxes. Remember: a ring on every domino that has just the same number of spots in both its boxes. *Ready.* "GO." *Erase drawings on blackboard.* "*Pencils up.*"

Now see how many dominoes have the same number of spots in both boxes. Write your answer on the dotted line here (pointing) under the dominoes. "GO."

19.—Picture Completions

This is a picture game. Look at the first row of pictures. Do you see the boy? He seems to be sitting, but there is nothing for him to sit on. Which one of these things on this same line belongs in the picture with the boy—the chair, the table, the stool, or the hat-rack?

The chair does, because the boy seems to be sitting and the chair could be slid right in under him for him to sit on. Now make a line like this (draw on board) through the chair to show that it belongs in the picture with the boy. Now look at the next row of pictures. Do you see the boy here (pointing) on the wagon? He seems to be driving, but he hasn't anything to drive. What should he have to drive? The horse? Yes! Draw a line through the horse to show that it belongs in the little picture with the boy and wagon.

NOW WE WILL TURN OVER THE PAGE AND FOLD THE BACK SHEET UNDER.

Do you see this first little picture here of the boy who is running? Why is he running? One of these pictures on the same line tells why. (Run finger along line of objects.) Think! Is he running away from the cat, from the man, from the chickens, or from his mother with the pie? Don't tell me the answer, but each of you draw a line with your pencil through the one which you think belongs in the picture with the boy.

"Pencils up."

Now in the next row of pictures find the one which belongs in picture No. 2 (point to No. 2) and draw a line through it. Then find what things belong in all of the other little pictures and mark them. Do one row at a time until you reach the bottom of the page. "GO." *"Stop."* (Stop when three-fourths of the class have finished.)

20.—PICTURE RECOGNITION

(Examiner will first make sure that no one has turned over the page.) Now put your pencils down and leave your papers as they are on your desks for I am going to tell you a story. I want you to listen carefully, as I shall ask you about it. (Read the following story.)

"One cold winter's morning the snow was falling. It was so cold outside that Johnny hated to get up, and he staid in bed so long that he had to hurry off to school without his breakfast. On the way to school he didn't see any other boys and girls, and was afraid that he was going to be late. When he got there, he found the doors locked, and then he remembered that it was the first day of the Christmas vacation and that there was, of course, no school. So he went back home and his mother gave him his breakfast. Then he got his skates and went out to the pond which was covered with ice. He found all his schoolmates skating on the ice. So he had a fine day after all and was very glad that he wasn't late to school."

Now turn your papers over to the next page where you will see a lot of pictures. Some of these pictures tell the right story as I just

told it to you, but some of them tell a wrong story. Now I want you to mark a "*C*" for correct (make a *C* on the blackboard) on all the pictures which tell the right story, and *cross out* like this (make X on board) all the pictures which tell the wrong story. Remember, put a *C* on all the right pictures and a cross on all the wrong pictures. *Take your pencils.* "GO." (*Stop* when three-fourths of class have finished.)

Turn to the last page.

21.—RULER

Now look at the ruler. I have made part of it and want you to make the rest. How many inches have I made? "Three."

(1) I want you to fill out the rest of the ruler, making all the real inches you can and just like those I made. Remember: it must be a good ruler to measure with. The inches must be just right. *Do not take* rulers from your desks. You must make the ruler without them. Ready! "GO."

(2) That's fine. Now I want you to measure Line 1 and write at the end of it how many inches there are in it. Measure it with the ruler you have just made. Now measure lines 2 and 3 and write how long they are.

(3) Now measure how wide this page is (pointing) and write the number of inches in the first box here in the middle of the page (pointing to it).

(4) In the second box write how many inches long this page is.

Now let us look at this map here (pointing to it).

It is a map of a town with a river flowing through it. *These straight lines show the streets* of the town (point to them) and this is the river. How many bridges are there over the river? Yes. Three. (Point to each of them. How many see the schoolhouse up here with the flag on it? (Upper right-hand on map.) How many see the "movies" up here by the town hall (point to upper left of map)?

(5) Suppose we call an inch a mile, how many miles is it then from the movies to the schoolhouse? Write the answer in box 3.

(6) This is Fountain Street that crosses the river (pointing). How many miles long is it from end to end? Write answer in box 4.

(7) How many miles is it down the river from the first to the last bridge? Write answer in box 5.

22.—Number Form Puzzles

Do you all see the ring with a dot in it? How many dots are there in the box?—(2), and in the tent?—(3). How many dots are there in the cross?—(4). Now look at the three rows of pictures without dots in them. We are going to write in them the numbers which tell how many dots there ought to be in each picture. We will write 2 in the square. Why? Because there are 2 dots in the square. What shall we write in the circle?—(1). What number shall we write in the cross?—(4). *"Pencils up."* Now when I say "GO," but not before, write the numbers in all the other figures. When you have finished the first row, do the second and then the third row. Remember: *do not put the dots in,* but put in the number which tells how many dots there should be. *Ready!* "GO." (*Stop after exactly one minute.*) "Stop." *Turn the papers over.* (Have papers turned over so that name is on top and collect.)

DIRECTIONS FOR SCORING GENERAL EXAMINATION A

Problem 1. *Total credit 3.*

See samples for scoring on Plate 1, which have been scored on following basis:

1 for a fairly good square anywhere.
1 for a fairly good circle anywhere.
1 for drawing a square and putting a circle in it. (What is credited here is not so much the accuracy of the drawings, provided they are recognizable, as evidence of the understanding of the directions.)

Problem 2. *Total credit 4.*

1 for a man to consist of a trunk, two legs, two arms and a head.
1 more, if he registers running.
1 for a dog to consist of a trunk, four legs, a head.
1 more, if he registers running.

Problem 3. *Total credit 3.*

1 for a square around or near enough to the watch to show that the child identifies the watch.

1 for a ring around the key or near enough to show that the child identifies the key.

1 for a cross cutting the knife or near enough to show that the child identifies the knife.

Problem 4. *Total credit 1.*

1 for a ring around the age number, or if the child in any other way indicates that he knows the number symbolizing his age.

Problem 5. *Total credit 2.*

1 for drawing an apple.

1 for drawing three or more halves of apples, of which the given apple may be halved to form two of those required.

Problem 6. *Total credit 2.*

1 for an O through or near enough to the hairpin to show that the child identifies it as the lightest object.

1 for an X through or near enough to the coal-hod to show that the child identifies it as the heaviest object.

Any marking that does not show that the child identifies an object correctly gives a credit of 0 for that item.

Problem 7. *Total credit 4.*

(a) 2 for a line drawn in the shorter road extending at least from fork to fork.

1 only if the road is checked or a line drawn parallel to it.

(b) 2 for a line reasonably direct from the house to the school.

1 for a line cutting the park straight from fork to fork.

Problem 8. *Total credit 3.*

2 for showing five marbles, either by drawing new ones or by halving those in the box.

1 for writing 5 to show that the child knows that ½ of 10 = 5.

Problem 9. *Total credit 2.*

1 for drawing exactly 13 sticks.

1 for writing the correct number symbol for the sticks drawn, if they exceed 10.

Problem 10. *Total credit 4.*

Score each diamond, crediting 2, 1, or 0 according to samples on Plate 2.

Problem 11. *Total credit 4.*

1 for drawing five fingers only.

1 more if the palm is drawn.

1 more if the thumb indicates it to be right hand.

1 for indicating with marks or a number (10; 5, 5; 8, 2; 4, 1, 4, 1) the correct number of fingers.

Problem 12. *Total credit 4.*

Score according to samples on Plate 3. The values have been assigned on the following basis:

4 for a 6-pointed star formed by two approximately equilateral triangles.

3 for a 6-pointed star formed by two isosceles triangles or for a 5-pointed star like sample under value 3.

2 for a fairly good 5- or 6-pointed star made without indication of triangles, or for well-drawn triangles which do not overlap so as to show six points (see last figure under value 2 of samples).

1 for two crudely overlapping triangles.

Problem 13. *Total credit 6.*

1 for 6 pennies marked, but not more than 6.

1 for 4 quarters marked (but not more than 4) with two lines or a "2" or "5" or "25."

1 for writing correctly the number of pennies which have been correctly marked, provided the number be not less than 2.

1 for writing correctly the number of quarters correctly marked, provided the number be 2, 3, or 4.

2 for indicating in any number language so that the examiner will know that the child has the idea, $1.06. (Combined sum.)

Problem 14. *Total credit 3.*

1 for drawing rings around or near the 1-cent stamps (three).

1 for drawing an X on or near the 2-cent stamps (three).

1 for indicating the idea 9 cents in any way clear to the examiner.

Problem 15. *Total credit 12.*

Score by samples on Plate 4. The plate may be turned about to correspond to the position of the square in the tests.

Credits of 12, 9, 6, 3, 1, or 0 only, no interpolation.

Three elements are taken account of in the scoring: the plan, the continuity of line, and the extent to which the field is covered. The first sample under value 9 is, for example, equal to the samples under value 12 in the first two respects, but not in the third.

Problem 16. *Total credit 24.*

Use stencil.

2 for each correct number placed over or near the right clock.

2 for each clock in the second line if the result is interpretable. The minute hand is considered correct if placed within 5 minutes of correct time. No penalty if hands are of same length.

1 point if one hand is pointed towards correct hour, but minute hand is wrong.

Problem 17. *Total credit 30.*

Use stencil.

1 for each correct response, subtracting one for each response which is wrong. The first three men in the first line and the rabbit in the third line and the first horse in the fourth line are used as examples and are not counted in the scoring. The last dog in the third line may be either crawling or standing.

(N. B.—Omitted items are not to be counted as either "right" or "wrong." If "wrongs" are more numerous than "rights," score is recorded as zero. These rules apply wherever Right minus Wrong method is used.)

DIRECTIONS FOR SCORING GENERAL EXAMINATION B

Problem 18 (Dominoes). *Total credit 13.*

Use stencil.

1 for each correct marking. Subtract one point for each incorrect marking.

2 for the correct answer to the question.

See note under directions for scoring Problem 17.

Problem 19 (Picture Completion). *Total credit 14.*

2 for each correct response. (Not counting examples on first page.)

Problem 20 (Picture Recognition). *Total credit 20.*

Use stencil.

1 for each picture correctly marked. In entering score, enter the "C's" and the "X's" separately, *i.e.*, enter the number of "C's" which are correct and the number of "X's" which are correct. Add the two for the total score.

Problem 21 (Ruler Test). *Total credit 20.*

Use stencil.

4 if ruler is correctly made. The elements may be marked as follows:

- 1 for getting in four spaces.
- 1 if spaces made are equal, regardless of number.
- 1 if quarter inches are put in.
- 1 if numbers are put on.

2 for the length of each line stated correctly.

1 for length of line if within one-half inch of correct length.

The following table shows credits for questions 3 to 7:

	3	4	5	6	7
2 points for	8–8½	10½–11½	4	3½	5–6

1 point credit is given for answers within either a half inch more or within a half inch less than the above, except in question 7 where 1 point is given for an answer between 6 and 8 inches. No penalty if numbers in last three questions are labelled inches instead of miles.

Problem 22 (Dotted Figures). *Total credit 24.*

Use stencil.

1 for each correct response, subtracting a point for each response which is wrong. The first three, which are used for demonstration, are not counted.

See note under the directions for Scoring Problem 17.

Sum of Credits for General Examination A = 111.
Sum of Credits for General Examination B = 91.
Total of Credits for Series I = 202.

Directions for Determining Mental Ages and Intelligence Quotients

A table giving the standard mental age equivalents of the various scores is printed on a following page and also on the back of the Record Sheet. To determine the approximate mental age of a pupil, find which of the standard scores is nearest his score, and look for the mental age at the head of the column. Look to the side to find the number of months, which should be added to the years previously found.

For example: in the table of Standards for Series I on page 21 it will be found that a score of 80 is equivalent to a mental age of 7 years and 5 months.

After the mental ages have been entered in the M. A. column of the Record Sheet, the Intelligence Quotients may be calculated, if desired, by dividing the mental age of a child by his chronological age. The in-

telligence quotient expresses the relation between the chronological age and the mental age; or, to state it in another way, it is the ratio between the pupil's score and the average score made by pupils of his own age. For example: Mary Smith, who is 6 years, 10 months old, makes a score of 44, which is equivalent to the mental age of 6 years, 5 months. This mental age, when divided by 6 years, 10 months, her chronological age, gives an intelligence quotient of 94.

Intelligence quotients between .90 and 1.10 are considered "average." Those of .70 or below, when accompanied by marked retardation in school and deficiency in school work, ordinarily indicate the desirability of training in special classes. Intelligence quotients of 1.30 or over, when the school work is satisfactory, usually indicate the desirability of placement in rapid advancement classes, extra promotion, or extra work in the present school grade. In doubtful and "borderline" cases, and especially when the intelligence quotients are below .80 or over 1.20, these tests should, when possible, be supplemented by individual mental tests and standard tests of school accomplishment.

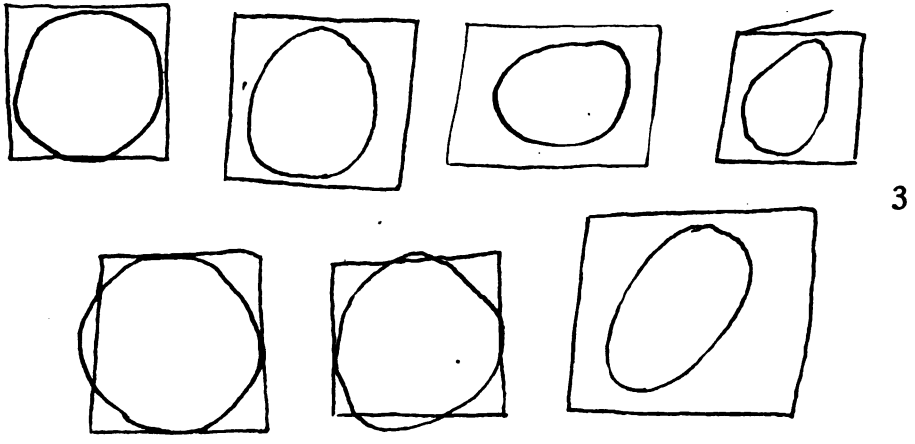
The scores in the mental tests may be given to the individual pupils, if desired. On the whole, it seems best not to report the mental ages or intelligence quotients to them.

To determine quickly the "average" performance of a class, sort the papers and arrange them according to scores, with the lowest on top. Find the middle paper after they have been put in proper order, and the score of this paper is the Median. If there are an even number of papers the median is half-way between the scores of the two middle papers. Standard medians for the grades are not given, as the performance to be expected depends upon the ages of the pupils tested, and these are conditioned upon the time of year when the tests are given and the age at which pupils are admitted to school. To secure, however, the approximate standard for any grade at the time the tests are given, first find the median of the chronological ages of the class or classes, then find in the table the score corresponding to this age. This will give the median mental age which should ordinarily be expected.

STANDARDS FOR SERIES I

Years	5	6	7	8		9	10	11	12	
Months					Months					Months
0	7	29	65	100	0	124	143	156	168	0
1	8	32	68	102	1	126	144	157	169	1
2	9	35	71	104	2	128	145	158	170	2
3	10	38	75	106	3	130	146	159	171	3
4	11	41	78	108	4	132	147	160	172	4
5	13	44	81	110	5	134	149	161	173	5
6	15	47	84	112	6	135	150	162	174	6
7	17	50	87	114	7	136	151	163	175	7
8	19	53	90	116	8	138	152	164	176	8
9	21	56	93	118	9	139	153	165	177	9
10	23	59	96	120	10	140	154	166	178	10
11	26	62	98	122	11	142	155	167	179	11

PLATE 1 FOR SCORING PROBLEM 1 OF GENERAL EXAMINATION A.



3

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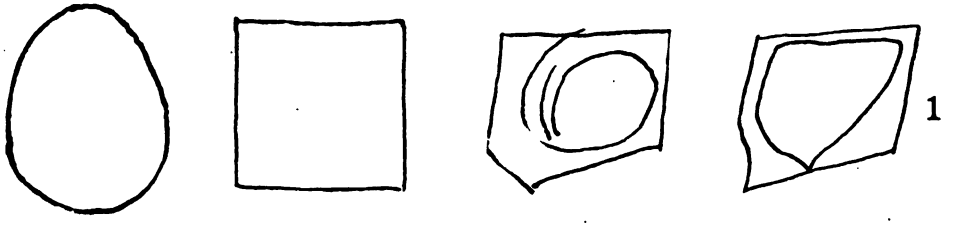

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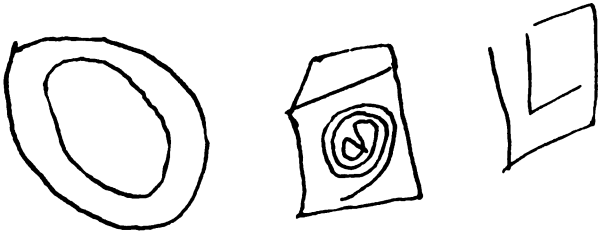

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PLATE 2 FOR SCORING PROBLEM 10 OF GENERAL EXAMINATION A.

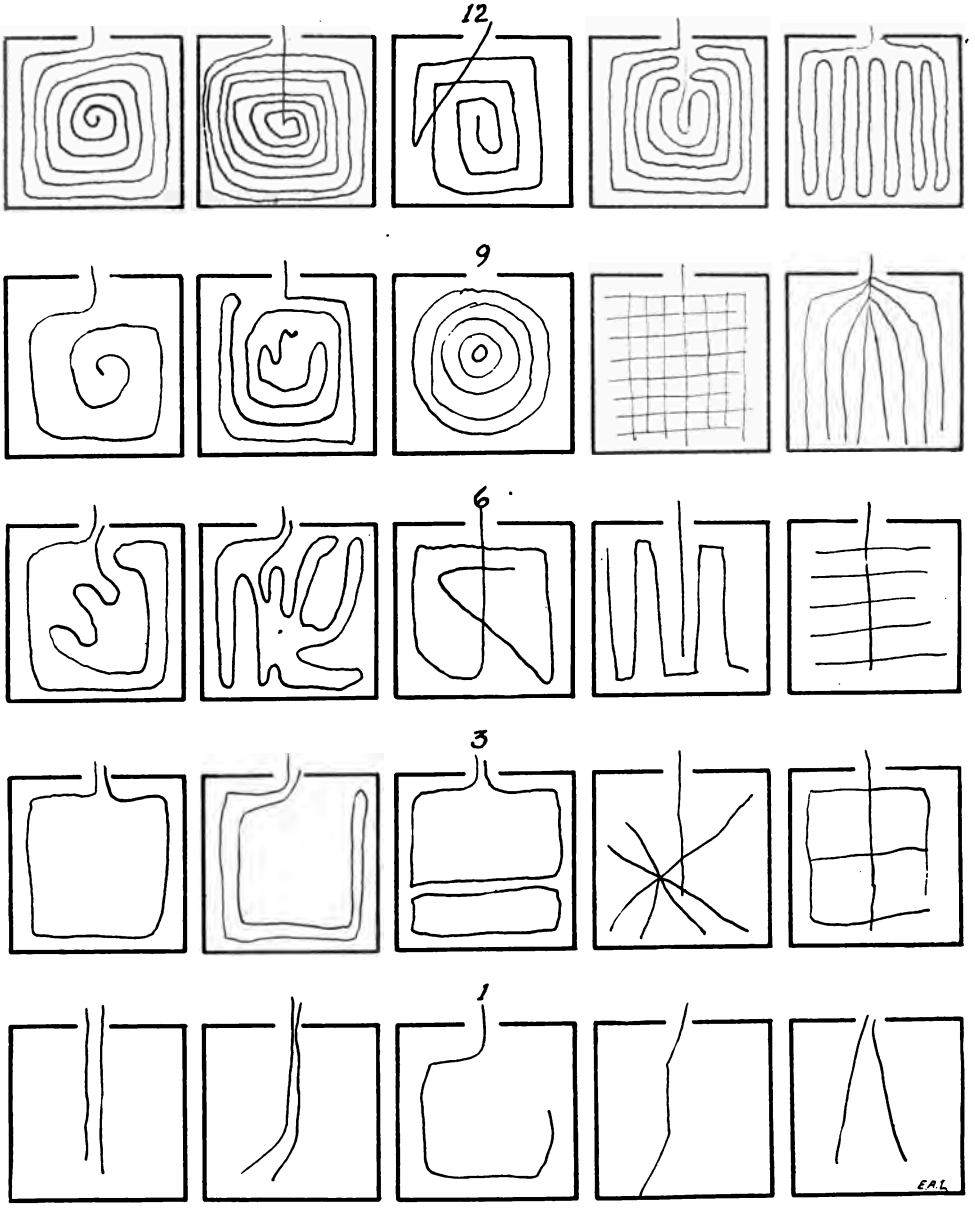
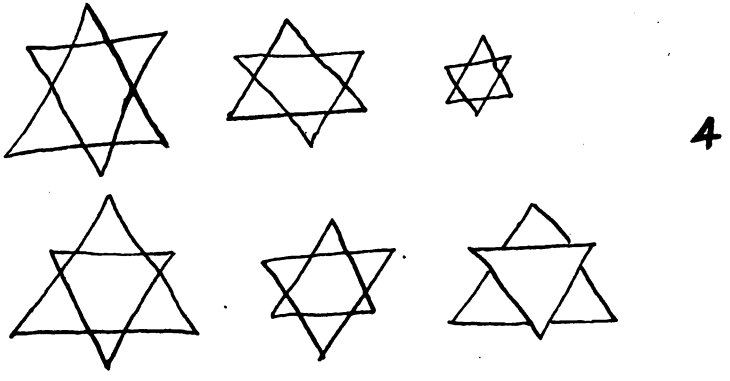


PLATE 3 FOR SCORING PROBLEM 12 OF GENERAL EXAMINATION A.



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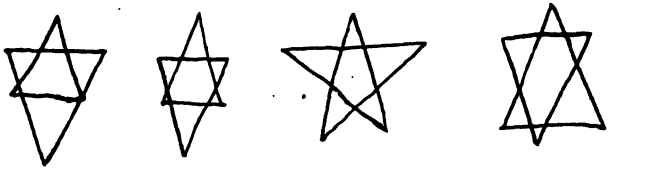

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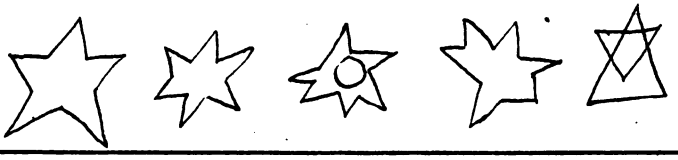

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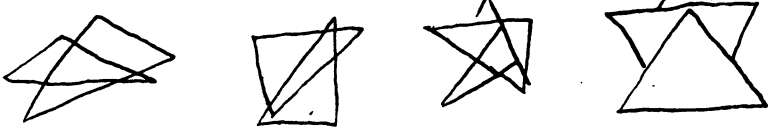

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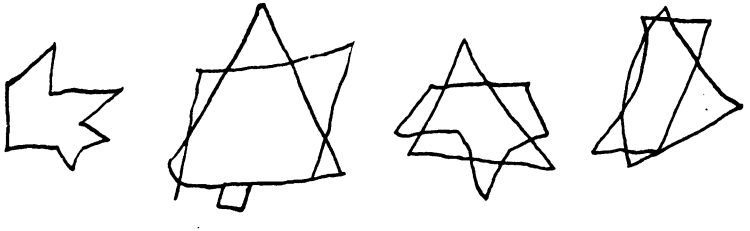

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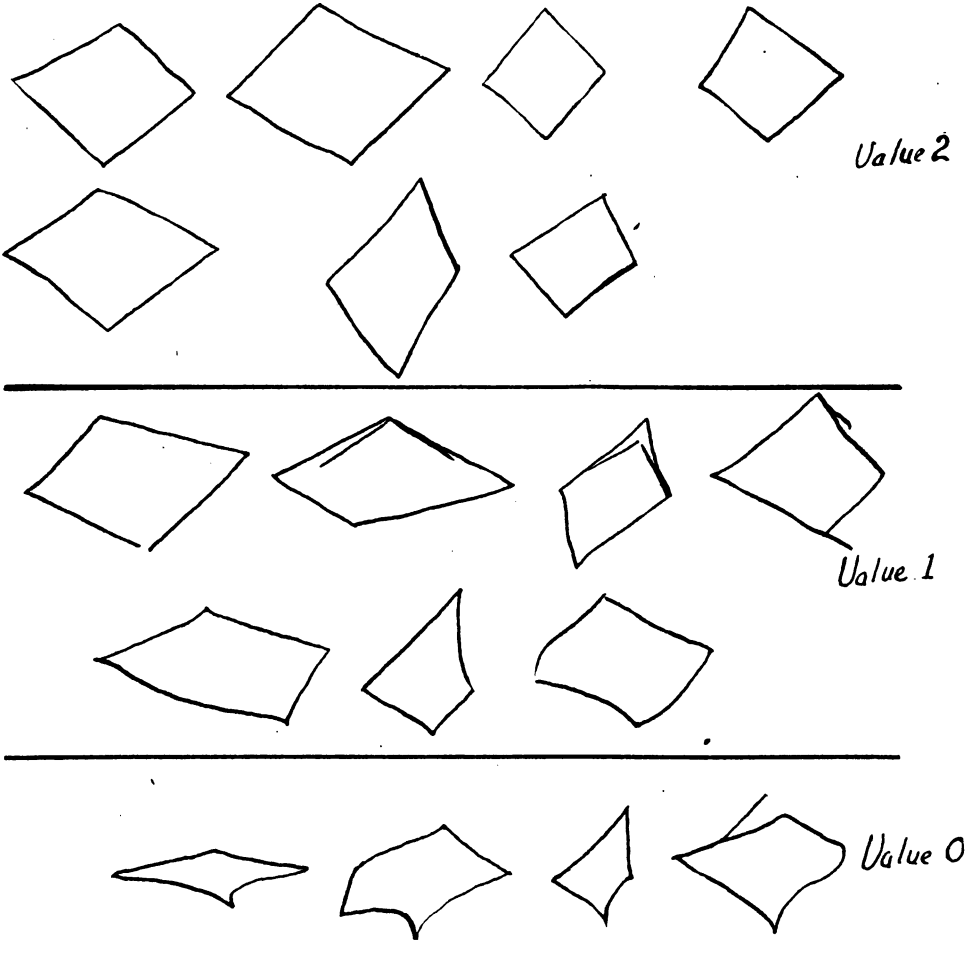
PLATE 4 FOR SCORING PROBLEM 15 OF GENERAL EXAMINATION A.



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